

**WHAT IS CLAIMED:**

1. A method of forming electrolessly plated terminations for electronic components, said method comprising the following steps:

providing a plurality of electronic components, each  
5 electronic component comprising a plurality of ceramic substrate layers selectively interleaved with a plurality of internal electrode elements, wherein selected portions of the internal electrode elements are exposed at selected locations along the periphery of the electronic component;

10 providing an electroless bath solution; and

immersing said plurality of electronic components in said electroless bath solution for a predetermined amount of time such that a termination material is deposited on said plurality of electronic components to form respective bridged terminations  
15 among selected of the exposed internal electrode elements.

2. The method of claim 1, wherein said predetermined amount of time is less than about fifteen minutes.

3. The method of claim 1, wherein said predetermined amount of time is determined corresponding to a required time to build up termination material to a thickness of greater than about one micron.

4. The method of claim 1, wherein said plurality of electronic components are immersed in said electroless bath solution for a predetermined amount of time such that bridged terminations having respective thicknesses of between about two and about  
5 four microns are effected.

5. The method of claim 1, wherein said electroless bath solution comprises a nickel or copper ionic solution.

6. The method of claim 1, further comprising a step of cleaning selected surfaces of the plurality of electronic components before immersing the electronic components in the electroless bath solution.

7. The method of claim 6, wherein the internal electrode elements of said electronic components comprise nickel and wherein said cleaning step comprises chemical polishing to substantially remove any buildup of Nickel Oxide on the

5 periphery of respective electronic components.

8. The method of claim 1, further comprising a step of heating the plurality of electronic components to strengthen the adhesion of the respective bridged terminations to the electronic components.

9. The method of claim 1, further comprising a step of activating exposed internal electrode portions to facilitate deposition of the termination material on the plurality of electronic components.

10. The method of claim 9, wherein the activating step further comprises applying an activation material in a fashion selected from the group consisting of immersing in metallic salts, photo-patterning organometallic precursors, screen printing or ink-jet  
5 depositing metallic compounds, and electrophoretically depositing metallization.

11. The method of claim 9, wherein the internal electrode elements of said electronic components comprises nickel and wherein the activating step further comprises applying an activation material in a fashion selected from the group  
5 consisting of immersing in Palladium salts, photo-patterning Palladium organometallic precursors, screen printing or ink-jet depositing Palladium compounds, and electrophoretically depositing Palladium.

12. A method of forming electrolessly plated terminations for electronic components, said method comprising the following steps:

providing a plurality of electronic components, each  
5 electronic component comprising a plurality of ceramic substrate layers selectively interleaved with a plurality of internal electrode elements, wherein selected portions of the internal electrode elements are exposed at selected locations along the periphery of the electronic component;

10 cleaning selected surfaces of the plurality of electronic components;

applying an activation material to exposed internal electrode portions of each electronic component; and

immersing said plurality of electronic components in an  
15 electroless bath solution for a predetermined amount of time such that a termination material is deposited on said plurality of electronic components to form respective bridged terminations among selected of the exposed internal electrode elements.

13. The method of claim 12, wherein said predetermined amount of time is less than about fifteen minutes.

14. The method of claim 12, wherein said predetermined amount of time is determined corresponding to a required time to build up termination material to a thickness of greater than about one micron.

15. The method of claim 12, wherein said plurality of electronic components are immersed in said electroless bath solution for a predetermined amount of time such that bridged terminations having respective thicknesses of between about two  
5 and about four microns are effected.

16. The method of claim 12, wherein said electroless bath solution comprises a nickel or copper ionic solution.

17. The method of claim 12, wherein the internal electrode elements of said electronic components comprise nickel and wherein said cleaning step comprises chemical polishing to substantially remove any buildup of Nickel Oxide on the periphery of respective electronic components.
18. The method of claim 12, further comprising a step of heating the plurality of electronic components to strengthen the adhesion of the respective bridged terminations to the electronic components.
19. The method of claim 12, wherein said step of applying an activation material corresponds to application in a fashion selected from the group consisting of immersing in metallic salts, photo-patterning organometallic precursors, screen printing or ink-jet depositing metallic compounds, or electrophoretically depositing metallization.
20. The method of claim 12, wherein the internal electrode elements of said electronic components comprises nickel and wherein the activating step further comprises applying an activation material in a fashion selected from the group consisting of immersing in Palladium salts, photo-patterning Palladium organometallic precursors, screen printing or ink-jet depositing Palladium compounds, and electrophoretically depositing Palladium.
21. A multilayer electronic component, comprising:
- a plurality of first ceramic layers, each ceramic layer being delimited laterally by edges;
  - a plurality of electrodes interleaved between said plurality of first ceramic layers, said plurality of electrodes characterized by tab portions thereof extending to and exposed along at least one edge of said plurality of first ceramic layers, said interleaved combination of electrodes and first

ceramic layers forming an internal assembly characterized by  
10 respective topmost and bottommost surfaces;

a plurality of second ceramic layers delimited laterally by  
edges and respectively provided on selected of the topmost and  
bottommost surfaces of said internal assembly to form at least  
one cover layer for the multilayer electronic component, said  
15 internal assembly and said at least one cover layer forming a  
monolithic component assembly characterized by respective  
topmost and bottommost surfaces; and

at least one layer of plated termination material  
connecting selected of said tab portions, wherein said tab  
20 portions are spaced from one another at predetermined distances  
such that the exposed tab portions act as nucleation and guide  
points for the plated termination material.

22. A multilayer electronic component as in claim 21, wherein  
the exposed tab portions of said electrodes are aligned in  
columns at selected edges of the internal assembly, said columns  
characterized by a respective width, and wherein the at least  
5 one layer of plated termination material is formed with  
substantially the same width as the aligned columns.

23. A multilayer electronic component as in claim 21, further  
comprising a plurality of internal anchor tabs interspersed  
among and exposed along selected edges of selected of said first  
and second ceramic layers.

24. A multilayer electronic component as in claim 21, wherein  
the exposed tab portions of said electrodes and the exposed  
portions of said internal anchor tabs are aligned in columns at  
selected edges of the monolithic component assembly within both  
5 the internal assembly and the at least one cover layer.

25. A multilayer electronic component as in claim 24, wherein  
said at least one layer of plated termination material is formed  
along the aligned columns of exposed said tab portions of said

electrodes and said internal anchor tabs such that said at least  
5 one layer of plated termination material extends from the  
topmost layer to the bottommost layer of said monolithic  
component assembly.

26. A multilayer electronic component as in claim 24, further  
comprising a plurality of external anchor tabs provided on a  
selected of the topmost and bottommost surfaces of said  
monolithic component assembly, and wherein said at least one  
5 layer of plated termination material is formed along the exposed  
said tab portions of said electrodes and said internal anchor  
tabs such that said at least one layer of plated termination  
material extends from the topmost layer to the bottommost layer  
of said monolithic component assembly and wraps around to a  
10 selected of the topmost and bottommost surfaces of the  
monolithic component assembly.

27. A multilayer component as in claim 26, wherein said  
external anchor tabs are embedded in and substantially flush  
with said selected of the topmost and bottommost surfaces of  
said monolithic component assembly.

28. A multilayer electronic component as in claim 24, further  
comprising a plurality of external anchor tabs provided on the  
topmost and bottommost surfaces of said monolithic component  
assembly, and wherein said at least one layer of plated  
5 termination material is formed along the exposed said tab  
portions of said electrodes and said internal anchor tabs such  
that said at least one layer of plated termination material  
extends from the topmost layer to the bottommost layer of said  
monolithic component assembly and wraps around to both the  
10 topmost and bottommost surfaces of the monolithic component  
assembly.

29. A multilayer component as in claim 28, wherein said external anchor tabs are embedded in and substantially flush with the topmost and bottommost surfaces of said monolithic component assembly.

30. A multilayer electronic component as in claim 24, wherein each exposed electrode tab portion and each exposed internal anchor tab portion aligned in a given column are exposed along the periphery of said monolithic component assembly at a distance less than ten microns from at least one other of the exposed electrode tab portions and exposed internal anchor tab portions in said given column.

31. A multilayer electronic component, comprising:

a plurality of insulating substrates each having an upper and a lower surface, said plurality of insulating substrates being delimited laterally by edges;

a plurality of electrodes interleaved between said plurality of insulating substrates, said plurality of electrodes characterized by tab portions thereof exposed along at least one edge of said plurality of substrates; and

at least one layer of electrolessly plated termination material connecting selected of said tab portions wherein tab portions are spaced from one another at predetermined distances such that the exposed tab portions act as nucleation and guide points for the electrolessly plated termination material.

32. A multilayer electronic component as in claim 31, wherein selected of said plurality of electrodes and respective tab portions are configured in a generally J-shaped configuration.

33. A multilayer electronic component as in claim 31, wherein selected of said plurality of electrodes and respective tab portions are configured in a generally T-shaped configuration.

34. A multilayer electronic component as in claim 31, wherein selected of said plurality of electrodes and respective tab portions are provided in an interdigitated configuration with electrode tab portions exposed on one selected side of the

5 multilayer electronic component such that said at least one layer of electrolessly plated termination material is formed on said one selected side of the multilayer electronic component.

35. A multilayer electronic component as in claim 31, wherein selected of said plurality of electrodes and respective tab portions are provided in an interdigitated configuration with electrode tab portions exposed on two selected sides of the

5 multilayer electronic component such that at least two layers of electrolessly plated termination material are respectively formed on said two selected sides of the multilayer electronic component.

36. A multilayer electronic component as in claim 31, wherein selected of said plurality of electrodes and respective tab portions are provided in an interdigitated configuration with electrode tab portions exposed on four selected sides of the

5 multilayer electronic component such that at least four layers of electrolessly plated termination material are respectively formed on said four selected sides of the multilayer electronic component.

37. A multilayer electronic component as in claim 31, wherein said electrodes comprise nickel.

38. A multilayer electronic component as in claim 37, wherein said electrodes further comprise a palladium dopant.

39. A multilayer electronic component as in claim 31, wherein said at least one layer of electrolessly plated termination material comprises copper.



40. A multilayer electronic component as in claim 31, further comprising additional termination layers successively applied over said at least one layer of electrolessly plated termination material.

- 5 41. A multilayer electronic component as in claim 40, wherein said at least one layer of electrolessly plated termination material comprises copper and wherein said additional termination layers comprise a layer of nickel and a layer of tin.